Closure on the single scattering albedo (SSA) at the T1 MILAGRO site

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What we did:

Surface chemical measurements: BC, OM, SO_4, dn/dr, usw.

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WRF-Chem "aerosol chemical to optical properties" module

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SSA calculations

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SSA observations

☞Agreement between SSA observations and calculations ?

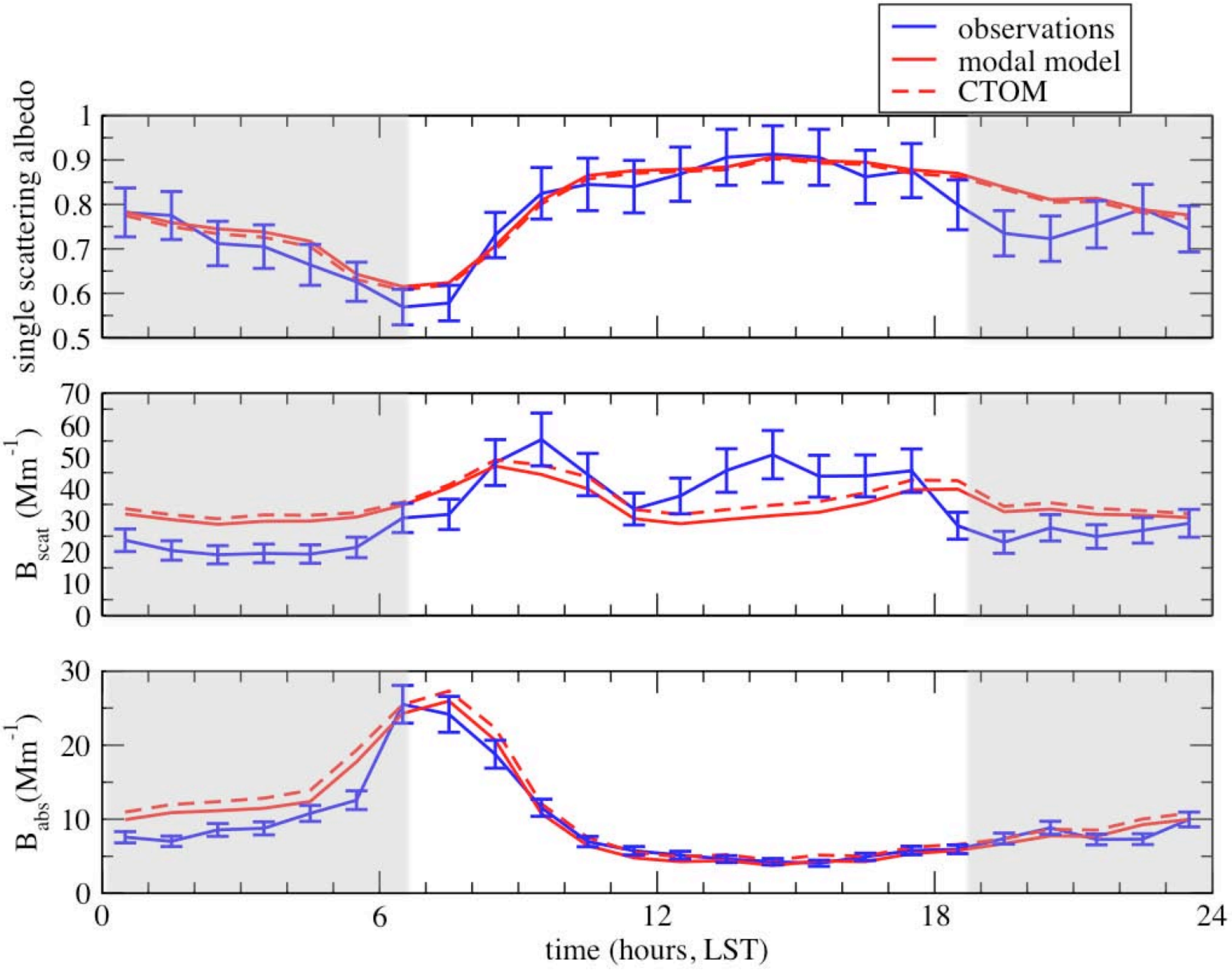
Why we did it:

Engineering: Test WRF-Chem "aerosol chemical to optical properties" module

Science: What are the physical determinants of the surface SSA at T1 (870 nm)?

☞ Why 870 nm? Wavelength of PAS, minimize complications from OA and dust absorption

What we found:



What this means:

WRF-Chem "aerosol chemical to optical properties" module seems to work

Physics (870 nm):

(1) Absorption governed mostly by BC

(2) Dust probably plays a big role in scattering

Barnard, J. C., Fast, J. D., Paredes-Miranda, G., and Arnott, W. P., 2009: Closure on the single scattering albedo in the WRF-Chem framework using data from the MILAGRO campaign, ACPD,9,5009-5054.

What we're doing next:

Bridging the gap between WRF-Chem (regional) and climate models (global).

Our Niche: Aerosol chemical properties ➔ optical properties

Example: use climate model aerosol refractive indices to compute MILAGRO SSA (with help from Bond and Bergstrom, 2006)